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[54] **PROCESS FOR THE TREATMENT OF KNITTED
 TEXTILE ARTICLES**
3 Claims, 4 Drawing Figs.

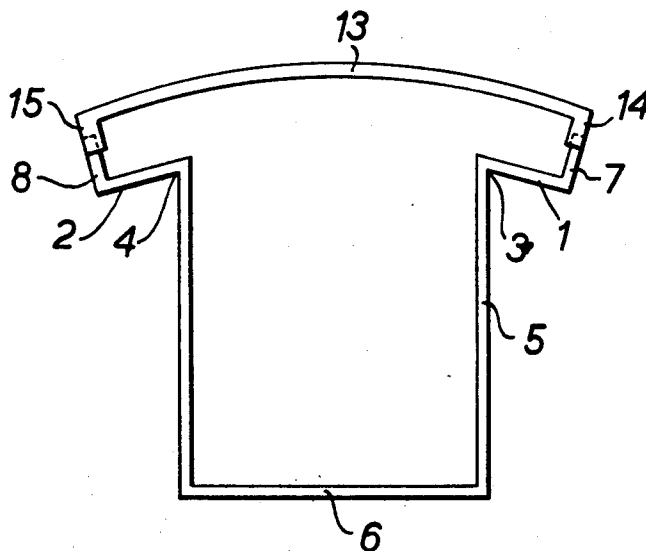
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149.3

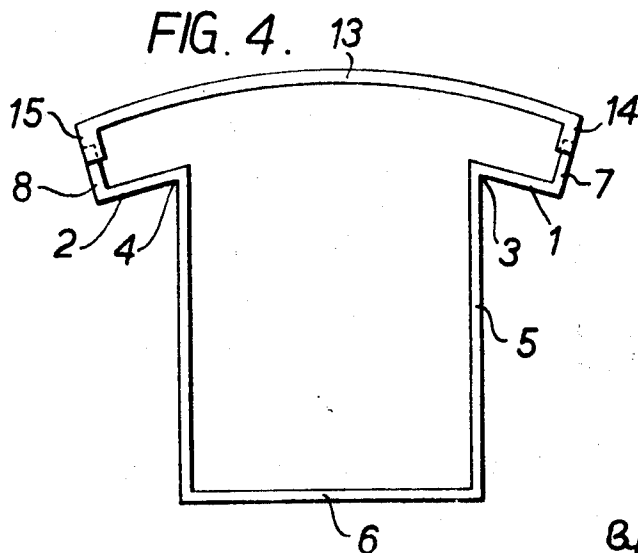
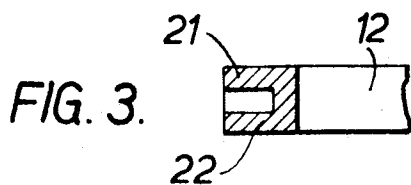
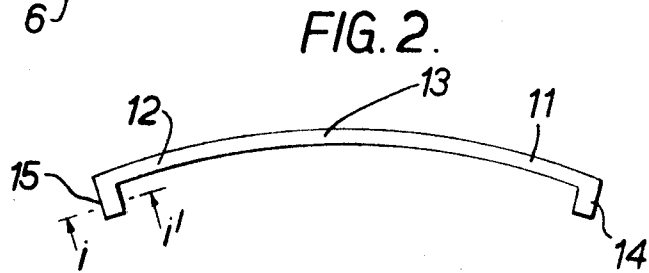
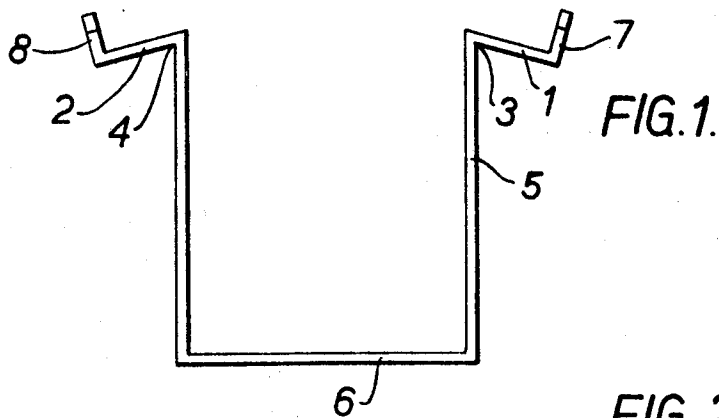
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ABSTRACT: Knitted textiles are subjected to heat treatment on a contoured rigid framework formed from detachable elements which are assembled inside the knitted textile, the torso section and the neck and shoulder section of the framework being formed from separate detachable elements.





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PROCESS FOR THE TREATMENT OF KNITTED TEXTILE ARTICLES

The present invention relates to a process for the heat treatment of knitted textile articles and to a device for use in the heat treatment of such articles which are intended to cover the human torso, e.g. cardigans, sweaters, pullovers, waistcoats etc. It is particularly concerned with the treatment of articles made of artificial, and particularly synthetic, yarns or fibers.

It is known to subject knitted garments to a dry or moist heat treatment during which they are kept in a desired shape to control the shape and length, to increase their crease resistance and to modify their handling characteristics. In practice, the knitted article is, in the case of circular-knit articles (garments of the sweater or pullover type etc. placed on a rigid framework of a definite shape, generally called a "shape", which is essentially contoured to the shape desired for the finished knitted article. The free end of the article, i.e. the major opening used to put on the garment may be closed off, and finally the whole assembly is placed in a steam chamber for a defined period.

When this treatment is applied to knitted fabrics containing yarns based on polyamide, especially texturized yarns of the false twist type it is necessary to hold the knitted fabric strongly onto the "shape" during the treatment because of the heat-shrinkage force of these yarns.

According to one proposed procedure, the knitted fabric is placed on a stretcher frame of the appropriate shape and the end of the knitted fabric is drawn downwards whilst at the same time subjecting it to the action of steam. This process, which is satisfactory in a technical sense, only allows a single knitted fabric to be created at a time and requires heavy, complex and costly apparatus.

It has also been proposed to provide the "shape" itself with a glued strip which on its free face has short and flexible spikes which make it possible to hold the knitted fabric from the inside without leaving visible marks on the article after treatment.

Unfortunately this process, which is convenient to carry out, particularly with knitted fabrics based on essentially nonshrinking artificial yarns, cannot be used successfully on knitted fabrics based on springy yarns such as texturized polyamide yarns because, as a result of the shrinkage force of these yarns, the free end of the knitted fabric is insufficiently held onto the "shape" by the spikes during the treatment. This results in poor setting of the length of the said knitted fabrics and in an irregular shape of these fabrics.

For knitted fabrics made of springy yarns, it has been proposed to provide a tubular, optionally detachable, element at the end, intended to receive a holding element such as a small bar, to join these holding elements immovably with the "shape" and finally to carry out the heat treatment.

This process, which gives good practical results as regards setting the length and shape of the knitted garments is not entirely satisfactory from an economic point of view.

The present invention alleviates these problems. Accordingly, the present invention provides a process for heat treatment of knitted textile articles on a framework contoured to the shape of the human torso, neck and shoulders which comprises closing together the edges of the article forming the major opening or openings, inserting the framework in disassembled form into the interior of the article, locating that part of the article designed to cover the torso on an element of the framework contoured to the shape of the torso, locating that part of the article designed to cover the neck and shoulders on a separate element of the framework contoured to the neck and shoulders, assembling the elements of the framework together to maintain the article in the desired shape, subjecting the article to the heat treatment and opening the closed edges and disassembling and removing the framework.

The edges of the knitted article, usually the longest edges designed to encircle the torso are closed together by a known

method such as sewing or stitching etc., using a yarn resists the conditions imposed by the subsequent heat treatment but can easily be removed thereafter. It is possible to use either a pulling thread, which is particularly advantageous if the heat treatment subsequently carried out on the knitted fabric is postsetting, or a yarn which can subsequently be dissolved in hot water such as alginate yarn or nonacetalized polyvinyl alcohol yarn, which is particularly suitable if the heat treatment is presetting, it being for example possible to remove this yarn during dyeing. Depending on the nature and the mesh of the part forming the edge of the knitted fabric, and depending on the desired final effect it is possible either to close the end of the knitted fabric directly or to fix to this end a detachable closed member and to remove this detachable member after treatment; the yarn connecting the end of the knitted fabric to the detachable member is advantageously a pulling thread or a soluble thread.

When the major opening in the garment, usually defined by that edge of the garment encircling the torso, has been closed the framework can be inserted through a minor opening, e.g. at the neck or in a sleeve. That part of the "shape" intended to receive the lower part of the knitted article such as the part covering the torso has an external contour essentially corresponding to that of the torso and perhaps part of the sleeve. The knitted article may be placed on this "shape" by slipping it on through a sleeve and then sliding it right along the "shape." Care is taken to adjust the body of the knitted article on the "shape," particularly so as to make the closed edge of this knitted article coincide with the lower part of the "shape."

Thereafter, a further portion of the "shape," also consisting of a rigid element contoured essentially to that of the top of the garment, may be slipped into a sleeve.

The two elements may then be assembled together so that the garment is at the desired length and shape. It is possible to adjust the knitted article on the "shape" consisting of the assembly of the two elements, taking care to line up all seams or other characteristic parts of the front and back of the garment.

Finally, the knitted article is heat treated on its "shape" in a manner which is in itself known.

After cooling, the closed edge of the knitted article is opened, by removing or withdrawing the closing thread.

The present invention also relates to a contoured framework for insertion into knitted textile articles to hold the article in a desired shape during heat treatment which comprises at least two rigid detachable elements which can be assembled together inside the article prior to heat treatment to provide a framework contoured to the shape of the human torso, neck and shoulders, the torso section and the neck and shoulder section being formed from separate detachable elements.

In practice, the framework will usually comprise two elements, the contour of the first essentially corresponding to that of the part of the knitted garment comprising the lower parts of the sleeves, the underarm section, the torso and the edge of the knitted fabric. The contour of the second element will correspond to that of the part of the garment comprising the upper parts of the sleeves and of the neck and shoulders. Where the garment to be treated does not include sleeves, the extended sleeve portion on the framework is unnecessary and can be omitted. Although the framework will usually comprise two elements, more than two elements could be used, e.g. the torso element could comprise two separable units.

The means used to join together the framework may consist of any appropriate elements to form the closure means such as screws, catches, U-sections etc.

The elements preferably consist of metal, particularly of stainless steel, and may be in the form of flat rods. Of course other materials are also suitable, it being sufficient for them to be able to resist the subsequent heat treatment conditions without deterioration.

The advantages of the present invention and the manner in which it can be carried out will be better understood by means

of the example which follows, given by way of illustration, in relation to the attached drawings.

This example relates to the treatment of a short-sleeved knitted garment but the present invention is of course not limited to the treatment of garments having a sleeve of this particular type.

FIG. 1 represents a schematic view of the element of the framework intended to receive the torso section of the knitted article.

FIG. 2 is a schematic view of the element of the framework intended to hold the neck and shoulder portion of the knitted article.

FIG. 3 is a cross section on line I-I' of FIG. 2 and shows a closure means for assembling the two elements.

FIG. 4 is a schematic view of the two elements assembled to form the framework.

The element of FIG. 1 consists of a flat rod of stainless steel of a few centimeters width, which essentially follows the contour of the lower parts of the sleeves 1 and 2, the underarm continuations 3 and 4, the torso 5 and the edge 6 of the knitted article to encircle the torso.

The lower part of the sleeves also includes the height of the opening of these sleeves 7 and 8. Though most commonly the section 6 is rectilinear, it can also possess a curved profile.

The element of FIG. 2 also consists of a flat rod made of stainless steel. This element is intended to receive the upper parts of the sleeves 11 and 12 and of the shoulders 13.

The ends of the parts 11 and 12 possess means for fixing this element to the element illustrated in FIG. 1. These means 14 and 15 may, for example, (FIG. 3) consist of a metallic part in the form of a U, 21, 22, the profile and thickness of which allow the parts 14 and 15 of the upper element to engage in the parts 7 and 8 of the torso element (see FIG. 4).

In the case of a grey knitted fabric with short sleeves, for example made of texturized polyamide yarns, the following procedure is adopted. The knitted fabric is placed over the torso element by slipping it over one of the parts 7 or 8 by one of its sleeves. The knitted fabric is slipped along this element and the body of the knitted fabric is adjusted thereon, particularly to make the edges of this knitted fabric, which has previously been closed together by stitching with a sodium alginate thread, coincide, and with the angles of the element to match up the underarm extension of the back and the front and the side seams of the back and the front.

The second element is then slipped in, again through a sleeve opening, and is locked onto the first element to form a frame for heat treatment of knitted fabrics on a "shape."

The heat treatment is carried out in a manner which is in itself known for example holding the garment for 20 minutes in steam at 130° C., and then, after cooling, the knitted garment, still on its frame, is passed into a bath containing an aqueous alkaline solution at 60° C., for degreasing before dyeing. The sodium alginate thread disappears by dissolving and this causes the edge of the knitted fabric to open.

After drying, the garment which has been treated in this way is dimensionally stable and has an essentially rectilinear edge.

I claim:

1. A process for the thermal treatment of a knitted textile article made of a synthetic yarn or fiber and having a principal opening and at least one subsidiary opening, on a framework contoured to the shape of the human torso, neck, shoulders and arms which is assembled from two detachable elements, the first element being contoured to the form of the human torso and underpart of the arms, the second element being contoured to the form of the neck, shoulders and upper part of the arms, comprising the following steps:

- a. closing together the edges of the principal opening in the knitted article,
- b. introducing the first element and second element in detached form into the interior of the knitted article,
- c. placing that part of the knitted article adapted to cover the torso onto corresponding sections of the first element and placing that part of the article adapted to cover the neck, shoulders and upper part of the arms onto corresponding portions of the second element,
- d. assembling together the first and second elements so that the knitted article takes up the desired shape on the framework,
- e. subjecting the knitted article mounted on the assembled framework to steam treatment,
- f. disassembling the assembled framework inside the knitted article and removing the first element and the second element from the interior of the knitted article.

2. A process according to claim 1, in which the edges are closed together with a pull thread.

3. A process according to claim 1, in which the edges are closed together by a detachable member joined to the edges with a pull thread.

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